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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,616	05/08/2006	Marcus Guzmann	290780US0PCT	3592
22850	7590	06/15/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CHOI, LING SIU	
			ART UNIT 1713	PAPER NUMBER
			NOTIFICATION DATE 06/15/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

Application No.

10/578,616

Applicant(s)

GUZMANN ET AL.

Examiner

Ling-Siu Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 08/07/2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. This Office Action is in response to the Preliminary Amendment filed 05/08/2006. Claims 1-8 are now pending, wherein claims 1-3 are drawn to a process to prepare (meth)acrylic acid copolymer; claims 4-5 are drawn to a (meth)acrylic acid copolymer; claim 6 is drawn to a process to stabilize phosphate and/or phosphonate and/or zinc ion in aqueous system; claim 7 is drawn to a method to use (meth)acrylic acid copolymer; and claim 8 is drawn to a formulation for water treatment.

***Claim Analysis***

2. Summary of claim 1:

A process for preparing (meth)acrylic acid copolymers, comprising:		
A	free-radical polymerization of (meth)acrylic acid to form a <b>polymer I</b>	
B	amidation of the <b>polymer I</b> by reaction with at least one aminoalkanesulfonic acid	
wherein the molar ratio of monomers in polymer I to aminoalkanesulfonic acid is from 15:1 to 2:1 and		
the (meth)acrylic acid copolymer comprises		
	a	from 30 to 95% by weight of a poly(meth)acrylic acid basic framework
	b	from 5 to 70% by weight of amide units based on aminoalkylsulfonic acids
the total weight of the units in the sulfonated polymer being 100 wt% and all weights being based on the sulfonated polymer		

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Summary of claim 4:

A (meth)acrylic acid copolymer which is obtainable by a process according to claim 1

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Fong et al. (US 4,604,431).

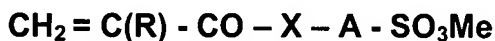
Fong et al. disclose an acrylic acid copolymer obtained by a process comprising heating a mixture of poly[acrylamide (75 mole %) - acrylic acid] (150 g of 27.5% solution in water); aminomethane sulfonic acid (13.2 g); and sodium hydroxide (10.2 g of 50% solution) in a reactor at 125°C for 4.5 hours, wherein the acrylic acid copolymer has a molecular weight of 15,900 as determined by GPC using polystyrene sulfonate standard and contains about 45% acrylic acid, 40% acrylamide and 15% sulfomethylacrylamide as estimated by C-13 NMR (Example 3). Thus, the present claims are anticipated by the disclosure of Fong et al.

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The caselaw has held that "[t]he patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Under this guideline, claims 4-5 are rejected as follows:

5. Claims 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirsch et al. (US 4,450,013).

Hirsch et al. disclose a dispersant which is a copolymer of: (A) 40 -90 wt% of an ethylenically unsaturated aliphatic carboxylic acid selected from the group consisting of **acrylic and methacrylic acids**, (B) 10 to 60 percent by weight of a compound having the formula:



where R is hydrogen or methyl; **X is -NH- or -O-**; A is C<sub>1-8</sub> alkylene or C<sub>1-3</sub> substituted alkylene, and Me is hydrogen, sodium potassium, or ammonium; and (C) 0 -10 wt% of another ethylenically unsaturated copolymerizable monomer selected from the group consisting of **acrylate and methacrylate esters of C<sub>1-4</sub> alcohols**, C<sub>1-4</sub> esters or half esters of maleic acid, acrylo- and methacrylonitrile, acryl- and methacrylamide (claim 1). Thus, the present claims are anticipated by the disclosure of Hirsch et al.

6. Claims 4-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Amick et al. (US 4,711,725).

Amick et al. disclose a water soluble polymer to inhibit the precipitation of calcium phosphate in an aqueous solution, corrosion, and scale formation, the water

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soluble polymer comprising about 42 - 84 wt% of **(meth)acrylic acid** and salts thereof, between about 11 and about 40 wt% of **2-acrylamido - 2- methyl propane sulfonic acid** or salts thereof, and about 5 -30 wt% of one or more units selected from the group consisting of **vinyl esters**, vinyl acetate and substituted acrylamide, where the water soluble polymer has a weight average molecular weight ranging from **about 3,000 to about 25,000** (col. 1, lines 36-54; claim 1). Thus, the present claims are anticipated by the disclosure of Amick et al.

7. Claims 4-5 and 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lange et al. (US 3,898,037).

Lange et al. disclose a copolymer to inhibit the corrosion of a metal surface, obtained by copolymerizing about 20-80 wt% of **2-acrylamido-2-methylpropane sulfonic acid** and about 20-80 wt% of **acrylic acid** in **isopropanol**, wherein the molecular weight of the copolymer is in the range from about **1,000 to 250,000** (col. 7, lines 19-36; claims 1-2). Thus, the present claims are anticipated by the disclosure of Lange et al.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fong et al. (US 4,604,431) in view of Muenster et al. (US 4,301,266).

Fong et al. disclose an acrylic acid copolymer obtained by a process comprising heating a mixture of poly[acrylamide (75 mole %) - acrylic acid] (150 g of 27.5% solution in water); aminomethane sulfonic acid (13.2 g); and sodium hydroxide (10.2 g of 50% solution) in a reactor at 125°C for 4.5 hours, wherein the acrylic acid copolymer has a molecular weight of 15,900 as determined by GPC using polystyrene sulfonate standard and contains about 45% acrylic acid, 40% acrylamide and 15% sulfomethylacrylamide as estimated by C-13 NMR (Example 3). Thus, the present claims are anticipated by the disclosure of Fong et al.

The difference between the present claims and the disclosure of Fong et al. is the requirement of a free radical polymerization to prepare the copolymer of acrylic acid and acrylamide.

It is noted that Fong et al. are silent on the method to prepare the copolymer. Muenster et al. disclose a copolymer as a dispersing agent, obtained by polymerizing acrylic acid (or methacrylic acid) and acrylamide in isopropanol or water/isopropanol (at least 40 wt%) in the presence of a polymerization initiator (peroxide or azo compound) at a temperature of from 120° to 200°C (abstract; col. 2, lines 7-14; claim 1). Muenster et al. further disclose that either isopropanol (at least 40wt%) or hydrogen peroxide (0.2-

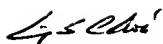
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5 wt%) can be used to obtain a low molecular weight polymer in the free radical polymerization [*motivation*] (col. 2, lines 15-32). In light of such benefit, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use free radical polymerization to make the copolymer and thereby obtain the present invention.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.



LING-SUI CHOI  
PRIMARY EXAMINER

June 7, 2007